This listing of claims will replace all prior versions and listings of claims in the application:

Listing of Claims:

1-77. (canceled)

78. (new) A method of making a heterogeneous building block array, the method comprising:

forming a plurality of spots on a solid support, the spots comprising a plurality of building blocks;

coupling a plurality of building blocks to the solid support in the spots through covalent bond, electrostatic interaction, or mixture thereof.

79. (new) The method of claim 78, wherein coupling comprises forming a covalent bond between:

alcohol, phenol, thiol, amine, carboxyl, or carbonyl group of the building block; and

alcohol, phenol, thiol, amine, carboxyl, or carbonyl group of the support.

80. (new) The method of claim 79, wherein coupling comprises forming an ester bond between the building block and the support.

81. (new) The method of claim 79, wherein coupling comprises forming an disulfide bond between the building block and the support.

82. (new) The method of claim 79, wherein coupling comprises forming an acetal or ketal bond between the building block and the support.

83. (new) The method of claim 79, wherein coupling comprises forming an imine bond between the building block and the support.

84.   (new) The method of claim 79, wherein coupling comprises forming an amide bond between the building block and the support.

85.   (new) The method of claim 78, wherein the support comprises a functionalized lawn coupled to the support and the building blocks are coupled to the lawn.

86. '   (new) The method of claim 79, wherein the support comprises a functionalized lawn coupled to the support and the building blocks are coupled to the lawn.

87.   (new) The method of claim 78, wherein coupling comprises forming an electrostatic interaction between:
        amine or carboxyl group of the building block; and
        amine or carboxyl group of the support.

88.   (new) The method of claim 87, wherein coupling comprises forming an electrostatic interaction between protonated amine of the building block and carboxylate of the support.

89.   (new) The method of claim 87, wherein coupling comprises forming an electrostatic interaction between carboxylate of the building block and protonated amine of the support.

90.   (new) A method of making a heterogeneous building block array, the method comprising:
        forming a plurality of spots on a solid support, the spots comprising a plurality of building blocks;
        coupling a plurality of building blocks to the solid support in the spots;
        each building block independently comprising negative charge, positive charge, hydrogen bond donor, hydrogen bond acceptor, hydrophobic moiety, or a combination thereof.

91.　(new)　The method of claim 90, wherein coupling comprises forming an electrostatic interaction between a negatively charged group of the building block and a positively charged group of the support.

92.　(new)　The method of claim 90, wherein coupling comprises forming an electrostatic interaction between a positively charged group of the building block and a negatively charged group of the support.

93.　(new)　The method of claim 90, wherein coupling comprises forming an electrostatic interaction between:

amine or carboxyl group of the building block; and

amine or carboxyl group of the support.

94.　(new)　The method of claim 93, wherein coupling comprises forming an electrostatic interaction between protonated amine of the building block and carboxylate of the support.

95.　(new)　The method of claim 93, wherein coupling comprises forming an electrostatic interaction between carboxylate of the building block and protonated amine of the support.

96.　(new)　The method of claim 90, wherein coupling comprises interaction between hydrogen bond donor of the building block and a hydrogen bond acceptor of the support.

97.　(new)　The method of claim 90, wherein coupling comprises interaction between hydrogen bond acceptor of the building block and a hydrogen bond donor of the support.

98.　(new)　The method of claim 90, wherein the support comprises a functionalized lawn coupled to the support and the building blocks are coupled to the lawn.

99.　(new)　A method of making a receptor surface, the method comprising:

forming a region on a solid support, the region comprising a plurality of building blocks;

coupling the plurality of building blocks to the solid support in the region through covalent bond, electrostatic interaction, or mixture thereof.

100. (new) A method of making a receptor surface, the method comprising:

forming a region on a solid support, the region comprising a plurality of building blocks;

coupling the plurality of building blocks to the solid support in the region;

each building block independently comprising negative charge, positive charge, hydrogen bond donor, hydrogen bond acceptor, hydrophobic moiety, or a combination thereof..

101. (new) A method of making an artificial receptor, the method comprising:

forming a region on a support, the region comprising a plurality of building blocks;

coupling the plurality of building blocks to the support in the region through covalent bond, electrostatic interaction, or mixture thereof.

102. (new) A method of making an artificial receptor, the method comprising:

forming a region on a support, the region comprising a plurality of building blocks;

coupling the plurality of building blocks to the support in the region;

each building block independently comprising negative charge, positive charge, hydrogen bond donor, hydrogen bond acceptor, hydrophobic moiety, or a combination thereof.

103. (new) A method of using an artificial receptor comprising:

contacting a first heterogeneous molecular array with a test ligand;

the array comprising:

a support; and

a plurality of spots of building blocks coupled to the support;

the spots of building blocks comprising a plurality of building blocks; and

the building blocks being coupled to the support through covalent bond, electrostatic interaction, or mixture thereof;

detecting binding of a test ligand to one or more spots; and

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selecting one or more of the binding spots as the artificial receptor;

wherein the building blocks in the array define a first set of building blocks, and the plurality of building blocks in the one or more binding spots defines one or more selected binding combination of building blocks;

determining the combinations of building blocks in the one or more binding spots;

developing, based on the combinations determined, one or more developed combinations of building blocks distinct from those in the one or more selected combinations of building blocks;

contacting a second heterogeneous molecular array with the test ligand,

the second heterogeneous molecular array comprising a plurality of spots,

the spots comprising a developed combination of building blocks;

the building blocks being coupled to the support through covalent bond,

electrostatic interaction, or mixture thereof;

detecting binding of a test ligand to one or more spots of the second heterogeneous molecular array; and

selecting one or more of the spots of the second heterogeneous molecular array as the artificial receptor;

wherein the building blocks in the second heterogeneous molecular array define a second set of building blocks.

104. (new) A method of using an artificial receptor comprising:

contacting a first heterogeneous molecular array with a test ligand;

the array comprising:

a support; and

a plurality of spots of building blocks coupled to the support;

the spots of building blocks comprising a plurality of building blocks;

the building blocks being coupled to the support; and

each building block independently comprising negative charge, positive charge, hydrogen bond donor, hydrogen bond acceptor, hydrophobic moiety, or a combination thereof;

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detecting binding of a test ligand to one or more spots; and

selecting one or more of the binding spots as the artificial receptor;

wherein the building blocks in the array define a first set of building blocks, and the plurality of building blocks in the one or more binding spots defines one or more selected binding combination of building blocks;

determining the combinations of building blocks in the one or more binding spots;

developing, based on the combinations determined, one or more developed combinations of building blocks distinct from those in the one or more selected combinations of building blocks;

contacting a second heterogeneous molecular array with the test ligand,

the second heterogeneous molecular array comprising a plurality of spots,

the spots comprising a developed combination of building blocks,

each building block independently comprising negative charge, positive charge, hydrogen bond donor, hydrogen bond acceptor, hydrophobic moiety, or a combination thereof;

detecting binding of a test ligand to one or more spots of the second heterogeneous molecular array; and

selecting one or more of the spots of the second heterogeneous molecular array as the artificial receptor;

wherein the building blocks in the second heterogeneous molecular array define a second set of building blocks.

105.   (new)   A composition comprising:

a support; and

a portion of the support comprising a plurality of building blocks;

the building blocks being coupled to the support through covalent bond, electrostatic interaction, or mixture thereof.

106.   (new)   The composition of claim 105, comprising building blocks coupled to the support through covalent bond.

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107. (new) The composition of claim 106, comprising building blocks coupled to the support through ester bond.

108. (new) The composition of claim 106, comprising building blocks coupled to the support through disulfide bond.

109. (new) The composition of claim 106, comprising building blocks coupled to the support through acetal or ketal bond.

110. (new) The composition of claim 106, comprising building blocks coupled to the support through imine bond.

111. (new) The composition of claim 106, comprising building blocks coupled to the support through amide bond.

112. (new) The composition of claim 105, comprising building blocks coupled to the support through electrostatic interaction.

113. (new) The composition of claim 112, comprising building blocks coupled to the support through electrostatic interaction between protonated amine of the building block and carboxylate of the support.

114. (new) The composition of claim 112, comprising building blocks coupled to the support through electrostatic interaction between carboxylate of the building block and protonated amine of the support.

115. (new) The composition of claim 105, comprising building blocks coupled to the support through covalent bond and building blocks coupled to the support through electrostatic interaction.

116. (new) A composition comprising:

a support; and

a portion of the support comprising a plurality of building blocks;

the building blocks being coupled to the support;

each building block independently comprising negative charge, positive charge, hydrogen bond donor, hydrogen bond acceptor, hydrophobic moiety, or a combination thereof.

117. (new) The composition of claim 116, comprising building blocks coupled to the support through electrostatic interaction between a negatively charged group of the building block and a positively charged group of the support.

118. (new) The composition of claim 116, comprising building blocks coupled to the support through electrostatic interaction between a positively charged group of the building block and a negatively charged group of the support.

119. (new) The composition of claim 116, comprising building blocks coupled to the support through electrostatic interaction between protonated amine of the building block and carboxylate of the support.

120. (new) The composition of claim 116, comprising building blocks coupled to the support through electrostatic interaction between carboxylate of the building block and protonated amine of the support.

121. (new) The composition of claim 116, wherein coupling comprises interaction between hydrogen bond donor of the building block and a hydrogen bond acceptor of the support.

122. (new) The composition of claim 116, wherein coupling comprises interaction between hydrogen bond acceptor of the building block and a hydrogen bond donor of the support.

123.   (new) An artificial receptor, the artificial receptor comprising a plurality of building blocks coupled to a support;

the building blocks coupled to the support through covalent bond, electrostatic interaction, or mixture thereof.

124.   (new) A heterogeneous building block array comprising:

a support; and

a plurality of spots on the support;

the spots comprising a plurality of building blocks; and

the building blocks being coupled to the support through covalent bond, electrostatic interaction, or mixture thereof.

125.   (new) A composition comprising:

a surface; and

a region on the surface comprising a plurality of building blocks;

the building blocks being coupled to the support through covalent bond, electrostatic interaction, or mixture thereof.

126.   (new) An artificial receptor, the artificial receptor comprising a plurality of building blocks coupled to a support;

each building block independently comprising negative charge, positive charge, hydrogen bond donor, hydrogen bond acceptor, hydrophobic moiety, or a combination thereof.

127.   (new) A heterogeneous building block array comprising:

a support; and

a plurality of spots on the support;

the spots comprising a plurality of building blocks;

the building blocks being coupled to the support;

each building block independently comprising negative charge, positive charge, hydrogen bond donor, hydrogen bond acceptor, hydrophobic moiety, or a combination thereof.

128. (new) A composition comprising:

a surface; and

a region on the surface comprising a plurality of building blocks;

the building blocks being coupled to the support;

each building block independently comprising negative charge, positive charge, hydrogen bond donor, hydrogen bond acceptor, hydrophobic moiety, or a combination thereof.

129. (new) A composition of matter comprising a plurality of building blocks; the building blocks having the formula:

linker-framework-(first recognition element)(second recognition element);

the building blocks being configured to be coupled to a support through covalent bond, electrostatic interaction, or mixture thereof.

130. (new) A composition of matter comprising a plurality of building blocks; the building blocks having the formula:

linker-framework-(first recognition element)(second recognition element);

each building block independently comprising negative charge, positive charge, hydrogen bond donor, hydrogen bond acceptor, hydrophobic moiety, or a combination thereof.